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ORIGINAL COMMUNICATIONS.

THE BIOPLASSON DOCTRINE AND ITS CRITICS. IN WHICH ARE THE "FALLACIES"?

BY S. E. DAVENPORT, D. D. S., M. D. S.

It is the fortune of all discoverers, inventors and reformers to have the correctness, the practicability and the sincerity of their discoveries, inventions and reforms questioned. If the questioner is sincere, and is open to conviction when the value of the reform or invention is demonstrated to him, then all are benefited by his outcry against "swallowing whole" a discovery until he can be assured of its truth, or of the necessity for its application. For the discoverer is bound to stand by his "find," and seeking to convert all sincere thinking men to his views, adds much to the knowledge of even non-questioners by the careful presentation of "why and wherefore" in the plain and simple language which one would naturally use in instructing a novice. If, on the other hand, the dissenter refuses to accept a theory or doctrine because it seems to interfere with one of his own, which he thinks—being good enough for him, should be unanimously accepted—the discussion between the expounder of the theory and the non-

believer will still be interesting and instructive if, indeed, the expounder does not see the mercenary spirit of the other, and therefore refuses to "talk." Truth will prevail! When these men, each with a theory, severally discuss their own, the stronger theory gains both from the good and true things which may be said of it and, negatively, from the crushing blows which are sure to be dealt its weaker adversary.

Dr. Lester Curtis, of Chicago, does not believe in the Heitzmann Bioplasson Doctrine. He has written two papers within the last year telling us what he does *not* believe; we are waiting now for him to inform us what he *does* believe—not that it is of such great importance to the scientific world, but it would enable us to decide whether to bury him in the grave with Galen and his "partes similares," with Haller and his fiber theory, or with Schwann and his cell theory.

A man may search and turn in a labyrinth for years and never find the proper way out of it; but when shown and instructed, the labyrinth is one to him no longer.

Dr. Curtis has seen the granules of the white blood corpuscles—perhaps the most distinctive feature of the healthy plastid—indeed, Dr. Heitzmann says that the more healthy the blood the more granular the corpuscles; but he has not seen, or has not been able to recognize, the reticulum which connects these granules. The Chairman of Section 1 was accorded the privilege of having his blood examined for the benefit of the class of which he was a member. Dr. Heitzmann plunged a small crowbar into the palmer surface of said fortunate chairman's thumb (he recollects perfectly that it was the left thumb, as it is now smaller than the other, though for days after much larger), and mounting a very small portion of the blood upon a slide, placed it under the microscope. The loser of the blood was in one respect disappointed in what he saw; it was not "blue blood," but the members of the class did see the reticulum connecting the granules of the white blood corpuscles, and nearly every evening the presence of the reticular structure was demonstrated in one tissue or another until, finally, when the eyes of the class had been somewhat trained, they saw the fine network in the enamel of the dental organs.

In Dr. Curtis' examinations he has had, it would seem, all necessary advantages as regards microscopes and lenses to enable him to see anything as fine, or even finer, than the reticulum claimed by Dr. Heitzmann to be present in the corpuscle. I think we all believe Heitzmann is correct, and that the reticulum is there.

Not being able to satisfy ourselves, then, that there was anything wrong or in any way inadequate in Dr. Curtis' lenses, believers in the reticulum must conclude that in Dr. Curtis himself, his inadequate examinations, his insufficient microscopical education, lie the reasons for his non-recognition of the reticulum.

If Dr. Curtis had used the heatable stage, perhaps his results would have been different, as the reticulum of the corpuscle shows much plainer at the temperature of from 80° to 90° F. than if examined at the usual temperature of the laboratory. The colorless blood corpuscle is larger than the red, and is present in the healthy blood in the ratio of about one white to 300 red. Much can be told of the condition of the constitution by the microscopical examination of the white blood corpuscle, which so closely resembles in appearance, structure and movement, the amœba. For years Dr. Heitzmann has paid close attention to the study of the blood of people in differing conditions of health and disease; constitutions possessing hereditary taint, constitutions beginning to break down from specific and violent causes, also those in apparent perfect health, and the records kept of almost numberless examinations agree so perfectly as to form a decided and almost infallible rule by which the examinations of blood from patients never seen can be made to assure the examiner as to the condition of that patient at the time.

It looks now as if the microscope was to be the most important factor in hastening the ideal "hereafter" of medical science when "prevention" shall be as much the province of the physician as "*cure*." It stands to reason that the constitution possessing the most energy and tone—in other words, ***health***—must have in its make-up the largest proportion of living matter or bioplasson. Colorless blood corpuscles in blood from such constitutions are found to be more coarsely granular, and to possess larger lines of bioplasson forming the reticulum. These granules are demonstrated by Dr. Heitzmann to be but the points or nodules formed by the intersection of two or more lines of the reticulum, therefore are of living matter, and their greater size in the best constitutions forms a strong corroborative proof. Many examples might be given illustrative of Dr. Heitzmann's ability to tell the condition of patients as to health or disease (and many times the exact disease from which the patient is suffering) from the examination of their blood brought to him, unaccompanied by any description of the patient; but in reference to Dr. Curtis' unbelief, it is only necessary to add that the conclusions—always so accurate—are based principally

upon the examinations of the colorless corpuscle, its reticulum and granules, their appearance differing greatly in blood of unlike qualities.

In this connection (an expression, by the way, which the N. Y. Sun assures its readers is bad English), it would seem pardonable to quote from Dr. Heitzmann's address before the New York Odontological Society, in February last, those few lines in which he refers to Dr. Curtis, and which Dr. Curtis asserts are not a sufficient answer to his argument; nor do they, in his opinion, sufficiently recognize the weight and power of his objections to the bioplasson doctrine. Dr. Heitzmann said:

"Lately Dr. Lester Curtis published an article on this subject, and stated that he did not see the reticulum. This is a very modest way to announce that one cannot see what another can. If a person publicly confesses that he cannot play upon the piano a masterpiece of Liszt's we are all willing to believe it; but does it follow that others cannot play it either? What is gained by such a confession? Dr. Curtis gives illustrations of what Elsberg and I have said and seen, and of what he could not see. I mention this because you are all prepared to understand that delicate observations of this nature are not easily made by every one. A great many look in the microscope, but very few can see. If one of you who had never played the violin were handed a good one and told to play a tune, he would say, 'I can't.' Let him practice a few years and learn to play a tune. It is very much the same with the microscope. If you look in it but for a short time you cannot see. It required more than fifteen years' application to enable me to see what can readily be seen, and if a tyro comes and declares that he cannot see, I do not think such assertions should be taken as proofs against facts corroborated by others."

The above would seem to be a sufficient answer to the assertions of a comparatively non-distinguished microscopist, unsupported as those assertions are by any well-defined explanations, or the corroborative evidence of men of note. It is egotistical for any unbeliever who chooses to publish his unbelief to expect a direct, full and carefully prepared reply going over the whole ground, from so busy a man as is Dr. Heitzmann. No pioneer in the scientific world was ever more ready or willing to explain and defend his discoveries and claims than is Carl Heitzmann. He does it in the fearless publication of his "Microscopical Morphology"—which we are all reading with great pleasure and profit—also in his daily teaching at his laboratory, where Dr. Curtis or any other dissenters are welcome at any time, and would

have no difficulty in seeing the reticular structure of the colorless blood corpuscle, or of any tissue of the body, having the advantage of Dr. Heitzmann's specimens, lenses and instruction.

From the perusal of Dr. Curtis' article in the August Cosmos, one would quickly conclude that of the three "*R's*," he takes the most delight in '*Rithmetic*, and while evidently believing the old adage, "figures do not lie," seeks to prove by their infallibility that diagrams *do*. While taking strong exception to that part of Dr. Curtis' article which insinuates against the honesty of Dr. Heitzmann, the writer of this report passes over it without comment, knowing that if Dr. Curtis had the honor of Dr. Heitzmann's acquaintance he surely would not question his honesty, whatever he might think of his claims, for all who have that honor early become assured of the entire sincerity of the man and of his earnest belief in the discoveries he has made.

That Dr. Curtis should "laugh to scorn" the diagrams drawn by Dr. Heitzmann to illustrate his writings, when in Germany he was considered one of the best and clearest artists in that line, and was much sought after to illustrate many noted standard works, is perhaps excusable when we think of the vast proportions which Chicago is rapidly assuming, and remember the testimony of phrenologists concerning the enormous development of certain bumps on the heads out there; but when he seriously attempts to prove by the use of mathematical rules and formulæ that the said diagrams do not and cannot represent what is to be seen under the microscope, he reaches the height of the ludicrous if not the ridiculous.

He counts the lines of living matter represented in one of the diagrams, also the interspaces, the sum of which he multiplies by the width—per linear inch—of each line and interspace, divides by the number of diameters which he supposes the specimen to have been magnified, and his conclusion gives him so large a corpuscle that he says at once: "This diagram is faulty, is 'made to order;' hence Heitzmann's bioplasson reticulum is not present!" Does Dr. Curtis expect diagrams drawn off-hand to represent, as if they were photographs, lines and interspaces absolutely correct as to number and positively accurate as to their width even to the thousandth of an inch? Some idea of the cause of the breezes from the West always being so *fresh*, now dawns upon us.

From what the writer can learn of Dr. Curtis, he is an earnest worker after truth, and undoubtedly is sincere in thinking the reticulum is not present as claimed, though he asserted at the meeting of the

American Society of Microscopists, at Elmira, last August, that the reticulum, or something like it, must be present to account for the contraction, extension, etc., of the living matter, but that he could not see it, which certainly seems to be sensible talk. There are some hopes that Dr. Curtis will soon be converted to the bioplasson doctrine, as Dr. Fuller, of Chicago, an intimate friend of his, studied with Dr. Heitzmann last June and is a firm believer in the reticulum.

S. Stricker, who until quite recently has been a believer in the Schwann cell theory, published in 1880 certain statements from which a few extracts may here be made and appended with advantage:

"The so-called migrating cells in the substantia propria of the cornea . . . are neither migrating nor isolated cells. We can easily see . . . that portions of their bodies gradually assume the appearance of basis-substance . . .

The basis-substance under favorable conditions exhibits, in its interior form, changes like those of amœboid cells.

A net-like arrangement, fibrillæ and other forms, come and go.

The basis-substance and the so-called migrating cells in it represent a continuous mass . . .

The epithelia of the cornea, with their so-called cement-ledges, likewise form a continuous living mass.

The salivary corpuscle is traversed by a sharply marked trabecular structure which, so long as the corpuscle is fresh, executes lively wavy motions. The waving gradually ceases on the addition of certain salts, and the reticular structure disappears. This waving is now replaced by very slow form-changes in the interior mass."

A. Spine, who works in Stricker's laboratory said, in 1879: "We are satisfied that from the cells of the hyaline cartilage project solid offshoots; these arise from the bodies of the cells, pervade the basis-substance and blend with the offshoots of other cells."

CRITICISM.

BY DR. WM. H. ATKINSON, NEW YORK.

"The cup which my Father hath given me, shall I not drink it?" John xviii. 11.

The trying circumstances under which this phrase originated may well be called to mind when our most earnest efforts to be useful are spurned as unworthy by those for whom we are working. Parents and teachers often find themselves thus situated when endeavoring to make the path of life or study easier for children or pupils than had been accorded them in their own days of non-age or study. There should be no wide gaps between teacher and pupil, i. e., teachers

should be taken from the next class above that from which the class of pupils is to be drawn. There is no more thankless position than that of bringing conviction of lack of knowledge to those who have been regarded as embodiments of everything known. Yet without just such a position being taken by some one, we can have no progress. Of this, the procedure of professional associations for improvement are examples. Societies that need constitutions, by-laws and codes of ethics, can never be the exponents of greatest advancement. This has been exemplified by the past, and is being shown in the present. The American Medical Association is a notable example of the way not to advance. The American Dental Association, under the lead of some who desire to be *regarded* as learned, able and competent much more *ardently* than they wished *to be* all these, modeled after the American Medical Association to the extent of even copying their organic blunders. The American Dental Association has had no greater stumbling block than this class of members. Whenever new discoveries are announced which clash with the old fogy misunderstanding of principle and fact, these are they who object, while openly confessing that they "do not understand a single sentence of the new presentment." One of these liberal bigots—who claims to be able to diagnose disease and prescribe the remedy therefor. correct the grammar, sense and value of speech or writing, and act as responsible censor of all that speakers or writers say or intend to say or ought to say—diagnosed a case as "progressive locomotorataxy" which has been running on for years now well into the teens, and the subject still is able to assume the work of accomplishing the herculean task above indicated. His last strong effort was a resort to political wire-pulling and caucusing at the meeting of the American Dental Association in Cincinnati to induce the members and Chair to declare the report of the Chairman of a Standing Section to be out of order, or otherwise have it dishonored, before he had seen or heard a single word of that report. Are such mis-diagnosis and such mis-malediction the acts of a safe guide in diagnosis and practice; or a reliable teacher, in the face of his open confession, after having heard the report referred to, that he "had given it his best and most earnest attention and yet did not understand a single word of it?" To those not devoid of natural affection, religious sentiment, or love of the race and of the truth for its own sake, this is a difficult situation to deal with. If the American Dental Association were composed of sound logicians and ripe moralists it would be an act of wisdom to let such scenes

pass and be forgotten. But as many are recruits from other fields of study, that do not embrace special regard to these higher responsibilities of logic and morals, it becomes a duty to the unsophisticated to take some notice of the negative method of illumination by "answering a matter before he heareth it" which "is folly and shame to him," as saith the Scripture. [As recorded Proverbs XVIII. 13.] Scripturians will recognize "There is a spirit in man and the inspiration of the Almighty giveth him understanding." [Job XXXII. 8.] Please observe the tense of the verb. It is not past nor future, but present. Revelation of truth is not of the past nor future, but *now*, and it comes through immediate "inspiration." The old fogy bigots dogmatically assert that there is no sufficient nor plenary "inspiration" but that which comes through the channels recognized by the priests, kings and legislators of the past. They never condescend to reply to the query, whence the ability to understand and interpret the *record* of the "Inspiration of the Almighty" made to the fathers. The inspiration of the atmosphere through the lungs and skin, by which bodily activity is maintained, is the analogue of that finer inspiration by which the mind and spirit are maintained from the hyperion!

"I am not come to destroy but to fulfill," was the plea of Him who spoke as "never man spake." The Romans and the Jews hated Him because they could not answer or "bring aught against Him" truthfully. He meekly bore it and went on doing the work He was sent to do. When they marveled at His exhibition of love and eloquence, He said, "Greater work than this shall ye do if ye be followers of that which is good." Railing accusation, such as "gibberish" and "bosh," cannot cover from observation the stupidity that attempts to hide behind the vapid cry of "Great is Diana of the Ephesians!"

The possession of a diploma that was conferred at a time when the curriculum of study of the whole range required was less than is now necessary to properly pass the single chair of chemistry, does not count much, even if it were had in the same class in which a man was graduated who had grown to renown since that event. Many a parchment has stood in the way of investigation, just as the near shilling has stood in the way of grasping the more distant pound. In like manner the musty record of old inspiration is grasped so tightly as to shut off the channels of present living revelations of vivid convictions of truth in small and in great things!

The introduction of new interpretation of law is the fulfillment of the old. The new teaching is to inaugurate the acquisition of truth

in small things in a small way, and not to wait for cataclysmic avalanches that blind us instead of thoroughly illuminating the truth! The greatest mistake of prophet, priest, king, legislator and teacher is the habit they all have had of regarding their investigations, decisions and edicts as finalities. Nothing short of omniscience and omnipotence is competent to establish finalities; and this has not been the manner of the divine procedure hitherto in the production of planets and inhabitants of planets.

Authority resides in the mind that perceives the truth, fact or philosophy. Anything short of this makes the dupes or slaves we have hitherto gloried in being. Let every man be *fully* persuaded in his own mind, and let him "set down naught in malice!" "Let a bear robbed of her whelps meet a man, rather than a fool in his folly." Prov. XVII. 12.

A CLASS OF PULPLESS TEETH. THEIR TREATMENT.

BY A. M. ROSS, CHICOPEE, MASS.

I have prepared this paper without reference to the literature of the subject of treating pulpless teeth, it being rather a result of long experience with a certain substance with the rationale of its application to a certain class of teeth. I know that the substance is used, to some extent, by dentists to accomplish the result for which I use it, but I do not recollect of ever reading any *scientific* reason *why* it is used. About eight years ago, while in practice with my father in Troy, N. Y., I had my attention called to the permanganate of potassa by a friend, a druggist in the city. We made many experiments with it—not confining our attention to spittoons—to prove its antiseptic property, and we were surprised at the time by the fact that but a small amount of the crystal was necessary to decompose a comparatively large amount of putrefactive matter.

Since that time I have used it extensively in my practice in treating a certain class of pulpless teeth.

I will not say that the subject of treating this class of teeth is an uninteresting one to dentists, but my methods and reasons for them may be quite uninteresting, and I will use as few words as possible in so doing.

I believe that the use of the permanganate of potassa in all teeth where decomposition of the pulp has occurred, is attended with greater

certainty of result favorable to the pericementum and subjacent tissues than by the use of salicylic acid, carbolic acid, and other preparations from phenol. Of the derivations of phenol it may be safely asserted that they *prevent* decomposition of normal albuminous matter by coagulation, deeply or superficially—but that they do not, cannot decompose decomposition products of albumen, their action being a coagulating one rather than a decomposing one. I refer to the contents of the walls of the pulp-cavity and do not wish to be understood as applying my remarks to pericementum for this reason: Upon the death of the pulp the albuminous matter in the dentinal canaliculi coagulates at first, and thus the structure is rendered opaque. This is the first change that occurs, which is followed by the decomposition of the coagulum. Now if the pulp is removed before death, and the cavity immediately saturated with carbolic acid, a coagulum is formed that is not so easily decomposed; or if the treatment is adopted after the removal of an arsenized pulp, the result may be as good, because arsenic does not coagulate albumen, if our esteemed friend, Prof. Mayr, is correct. (I would say in parenthesis that in view of the circulation that is maintained in the cementum and the periphery of dentine of "dead" teeth, and the fact of long continued action of arsenic, unless the arsenized fluids can be coagulated, I think that something else than arsenic for destroying pulps should be used.)

Death of the pulp is followed by decomposition. Decomposition of the pulp from any physiological or pathological cause will produce the sulphides of albumen, sulphuretted hydrogen, etc.

After the pulp-chamber of the tooth has been freely opened, so that the canal or canals may be entered by a smooth broach, less than a grain of the potassa is placed in a half ounce of cold water, or about in that proportion, about a drachm being prepared for a treatment. A little absorbent cotton is roped on the broach, saturated in the solution and introduced but a short distance, and immediately removed. The color is changed. The fluid as introduced is a beautiful purple; upon removal it is brown. In this way a number of twists of cotton are wet in the solution, each in turn forced further into the canal, until the bits of cotton upon removal are found to be but little changed in color from purple. Thus I have used as many as twenty little twists of cotton in a *first* treatment. By taking precaution to never make the solution too strong, I have obtained most satisfactory permanent results. I have frequently conversed with Prof. Mayr upon this subject and have been enlightened upon it very much. I will briefly

state that the permanganate of potassa is manganese peroxide, plus oxygen, plus potassium; that there is an excess of oxygen ready for combination; that this oxygen being brought into a cavity containing sulphides of albumen or sulphuretted hydrogen, these are decomposed and water is formed, etc., and the permanganic acid is thus reduced to the peroxide of manganese, or oxide of manganese, according to circumstances, both of which are brown in color. The use of this chemical in treating a certain class of pulpless teeth insures the decomposition of those products that are the feeders of pyogenic membrane, and the sense of *sight* being quite sufficient to make apparent the accomplishment of this. We hear much talk about the ease and certainty with which certain bicuspid and molar buccal roots are opened, cleansed and filled with gold, etc. A careful study of *many* such roots by transverse sections under the microscope would show how utterly impossible this is in a great majority of cases, and how impossible it is to conjecture about the size and character of canal by outside formation, and we don't even have this to guide us except in cases of replantation.

I speak of this to show how impracticable much of this talk is about *mechanical* dexterity in treating and filling pulp canals. It is misleading to those who do not know much of tooth anatomy. In many cases it is not possible to reach the apices of roots, and the closing up of that portion of the root *has to be done as near* the apex as possible. Now if the canals in many bicuspids are plural, elliptical in transverse shape, in buccal roots of superior molars the same, how are we to be certain of a good result in any case except where we use an agent that shall form new compounds and leave a veritable and comparatively insoluble new product in place of the old decomposing one? An agent that can be flooded over all surfaces? This agent *does* stain dentine, but so slightly if the proportions of crystal to water are right for each case that the surface of the tooth does not reveal it. But is not the oxide or peroxide of manganese preferable as a deposit in the open ends of the dentinal canaliculi than some of the products of decomposed albumen? The proper *treatment* of this class of pulpless teeth is of as much importance as the after *sealing of the ends of the canal;* both operations being thorough, the material with which the *root is filled* is of very little importance.

SOCIETIES.

CONNECTICUT VALLEY DENTAL SOCIETY.

The nineteenth annual meeting was held at the Massasoit House, Springfield, October 26 and 27. After transaction of some routine business, and the election of new members, viz.: Prof. R. R. Andrews of Cambridge, Drs. W. F. Andrews of Springfield, W. L. Roberts of Spencer, J. W. Gould of Worcester, J. B. Coolidge of Boston, and D. L. Church of New Haven, Dr. S. E. Davenport suggested that it was a good time to consider the place for next meeting. The last meeting at Amherst was the most pleasant, and it was so considered by all the members present. An excellent idea is to make the June meetings the pleasantest, because they have been the smaller, as a rule, of two meetings in the year. Therefore, the locality should be selected with care. A good idea will be to consider Mt. Holyoke for our next meeting. Dr. Heitzmann might be induced to come. The matter was referred to the Executive Committee.

The subject, What, if any, are the Unfavorable Results following the Administration of Nitrous Oxide Gas? was taken up.

Dr. J. J. VINCENT did not give gas, believing it injurious more or less to every one. The effect upon the lungs he believed to be similar to that of hot water upon a sponge. The lungs were like a sponge in a certain sense, and only those without conscience should ever administer gas.

Dr. S. B. BARTHOLOMEW thought he was a man of conscience, and he had given liquid gas for ten years, and gave it constantly. Had never considered it an unsafe article, and he had been convinced of late that he was right. Some of us heard Dr. Barrett's recent address at Boston, of two and a half hours, in which gas was recommended as the safest anæsthetic. It should be given properly. The trouble is that patients become asphyxiated by not having air enough; the blueness is not caused by the gas, but by carbonic acid. Give the patient a little air as the blueness appears, and without interfering with the anæsthetic effect, this color disappears. I have never had a case of headache or nausea following the administration of gas.

Dr. S. E. DAVENPORT: Dr. Bartholomew says blueness is not caused by the gas but by insufficient air.

Dr. BARTHOLOMEW: I said a little air causes a departing of the

color. I have sometimes been two or three minutes bringing the patient under the influence.

Dr. VINCENT: Why is this?

Dr. BARTHOLOMEW: The question is a natural one, but the answer is easy. No one is always in the same favorable condition, and apoplexia might be brought on by too heavy and continuous breathing of the gas.

Dr. S. E. DAVENPORT: Dr. Bartholomew's idea of giving a little atmospheric air with his gas is new. I wonder if the purple appearance is always an indication of anæsthesia. I wonder if a patient given air, and blueness departs, if more gas is not afterward necessary.

Dr. BARTHOLOMEW: The administration of air after giving gas is in a large number of cases absolutely necessary.

Dr. MORGAN: A certain writer has said that no one can become thoroughly drunk without there being a lesion of the brain. Whether this is true or not, it is reasonable to suppose that there is more or less injury to the nervous system—of which the brain is the center—from an agent that acts so rapidly as gas does. I could not approve of the practice, but if the operator could give ether as readily as gas, gas would soon be banished from our offices.

Dr. STOCKWELL agrees with Dr. Morgan, and does not give gas of late once where he formerly used it twenty times. He believes that injury is often the result. The injury may not be suspected at the time, but a train of effects is started which sooner or later may even result fatally. Has had cases where severe headache and even vomiting have followed the administration of gas. He understood Dr. Barrett somewhat differently than Dr. Bartholomew seems to have done. Dr. Barrett demonstrated that nitrous oxide gas "kills" nearly, if not quite, as quickly as carbonic acid gas; which proves that the theory of some, that nitrous oxide gas is a "supporter of life," is not well founded. That it so seldom kills instantly is no proof that it is harmless, and that it may not be the unsuspected origin of very serious more or less remote disturbances. Believes ether to be safer.

Dr. MILLER said: We must not boast of our experience, for evidently that does not count. Related his own experience with gas, dating from about the time of Dr. Colton's gas exhibitions at Westfield. It had not been uniform, and it had been sometimes very unsatisfactory.

Dr. JEWETT wanted to know if there were any special indications which would guide one in the administration of gas.

Dr. HOWLAND said that purity of the article was first required. Look to it by careful test, that the nitrate of ammonia is pure. He made his own gas. Had done so for years, and gave it sometimes nine times in a day.

Adjourned to 2 P. M.

AFTERNOON SESSION—FIRST DAY.

Election of officers: President, N. Morgan; Vice-Presidents, A. M. Ross, S. E. Davenport; Secretary, A. M. Ross; Assistant Secretary, C. W. Strang; Treasurer, W. H. Jones. The Executive Committee appointed by the President elect: S. B. Bartholomew, George L. Parmele, A. J. Nims.

Dr. Searle introduced Drs. W. H. Atkinson and Frank Abbott to the assembly, who had just arrived at the meeting when the election of officers was completed. President Fones then delivered the annual address. (The address will appear in January number of the Journal.)

SECTION 1. Chairman S. E. Davenport, after reading an interesting report [This report may be found elsewhere in this number.] called on Dr. A. F. Davenport, of North Adams, to report on Anatomy. The doctor responded as follows:

"MR. PRESIDENT AND GENTLEMEN: Anatomy is an old and familiar subject—one which we have long regarded as the foundation of dental as well as medical science. But the knowledge of anatomy, unlike its kindred sciences, has to be obtained largely by cuts, charts and diagrams. Gray understood this in the preparation of his masterly work on this subject; for very few students would make either descriptive or surgical anatomy a profitable study were they not aided by illustrations. Therefore, in view of this fact, I have executed a drawing which will illustrate the subject better perhaps than anything I can say upon it. My purpose in preparing it has been to present it to the Society, that it may be preserved among its archives for future reference. The drawing is a delicate one and will require framing, and should the Society see fit to accept it, I propose that it be kept in Mr. Williams' Dental Depot as a convenient center; and, if the Society see fit, it may be hung in the room in which the annual meeting is held." The unveiling of the Doctor's work, which he had purposely not done until he had concluded the above remarks, brought forth loud cheering and applause, for it proved to be a finely executed crayon portrait of Dr. W. H. Atkinson. As Dr. Davenport raised the

veil, he said: "We all recognize in this drawing the *tip top blue blossom of Dental Anatomy!*"

A vote of thanks was given Dr. Davenport for his gift, and he and Dr. Stockwell were appointed a committee to take charge of the portrait and have it suitably framed.

Dr. ATKINSON: I cannot disguise my surprise, and yet I ought to have known that something was up, because I was asked to sit for a photograph. I am pleased, and more pleased than you are, at this token of your regard. I want to express my thanks for this report. I love art, and could have been an artist if I had had culture. Therefore, I feel that I can appreciate this work of our beloved friend. Though not a judge of portraits of myself, I believe this to be honest work, and it is honest work that the enlightened world wants. I want the honest professions of dentistry—*you*, as naturalists, to shed your legitimate light upon the world. Let us hope that none of us are without knowledge, or that any of us are supposed to possess all knowledge. Again I thank you.

Dr. FRANK ABBOTT: I hope and believe that the truth will prevail. I know it as a fact that Carl Heitzmann has found a great truth. I have studied long and earnestly in his laboratory, and not my testimony alone, but that of others, also, is before the medical and dental professions corroborative of his discovery. He says that if you will study hyaline cartilage, looking, and carefully drawing what you see, giving time and care, pretty soon it will dawn upon you that there is something there that you could not see before. I have seen the reticular structure time and time again. I have watched the amœba, following its movement, seeing the projection of a part of its body and its contraction, and thus the movement of the whole. I first observed in its contents dots or granules, and these, I afterwards saw, were connected by delicate lines. Dr. Heitzmann takes this organism as typical of all animal life. We are no more than a large amœba. One of the most difficult tissues to demonstrate the reticular structure of, was the human tooth. The enamel was formerly considered as a mere crystal, but it contains a reticulum of living matter. The dentine shows this structure more beautifully. Dr. Bödecker and I studied in Dr. Heitzmann's laboratory, learning to prepare and mount specimens. I have prepared and mounted there between 600 and 700 specimens. Dr. Bödecker has mounted probably 1,500. Dr. Atkinson has been our monitor and prompter, prodding us on in our work, and I hope he may give us something more than he has yet, to do in this line of research.

Dr. STOCKWELL: Does the reticulum extend through the meshes of enamel?

Dr. ABBOTT: The same as shown by the drawings in Dr. Heitzmann's book.

Dr. STOCKWELL: Does the mesh show the structure?

Dr. ABBOTT: I did not say that, but I believe it is there. Our objectives are not powerful enough nor perfect enough to show this perfectly.

Dr. NILES: What powers do you use?

Dr. ABBOTT: About 1,400 or 1,500 diameters.

Dr. NILES: Do you use mica for covering glass?

Dr. ABBOTT: No; we use an extremely thin glass cover.

SECTION 2.

Dr. JAS. MCMANUS, Chairman: I have nothing further to offer than papers by Dr. Stockwell and Prof. Mayr, and Drs. Bartholomew and Searle.

Dr. Stockwell's paper, "Etiology of Dental Caries," etc., appeared in the November Journal. Prof. Mayr's experiments were then reported. Following this was a paper by Dr. Bartholomew.

Dr. SEARLE: There are gentlemen present who can entertain the meeting better than I, and what I have to offer is very little. My experience has been such that I cannot reconcile caries of teeth with an acid theory, but very much of this disease I can reconcile with a septic theory. There is not a case of artificial caries produced that is like natural caries. Magitot does not show experiments that prove likeness to natural decay. The germ theory will better explain the process. You know it has been stated that cotton thoroughly prevents the approach of germs, that carbolic acid destroys them, that glycerine glues them together. I have a case in mind that surprises one. Over thirty years since, I had hastily finished some fillings for a lady, and in a large molar cavity I had neither time nor courage to fill with gold, I carefully packed in a solid filling of cotton. What was the result, do you suppose? I looked at this tooth four years afterward, took out the cotton, and found the tooth sound and hard under the cotton. I thought it had done so well I would refill with cotton. Several years afterward I found it filled with tin. Dr. Blank put in tin, thinking cotton had been there long enough. I believe the cotton excluded the germs and rendered the contents of the cavity inactive. The germ theory is the more satisfactory theory, but still I am puzzled in this respect. If I have two centrals, for instance, one

is decayed the other is not, why is this? neither theory fits such a case, unless that germs found lodgment on one tooth and not on the other. Aside from some such special instances, the germ theory is the most rational one. You know that surgeons will not operate except under carbolic acid spray in large operations, because they would keep from the freshly cut surfaces the germs existing in the air. I use carbolic acid and glycerine in cavities, and don't care to dry out all the carbolic acid before filling, and I must abide results.

Discussion deferred to evening session.

Adjourned to 7 P. M.

EDITORIAL.

When in January last year we started the Journal, we thought we would do very well if we could earn from the profession support enough to keep us afloat, and we did not expect anything like the actual success attained by the Journal. We have demonstrated once more that there is interest in the profession for scientific even relatively abstract truth, and that a journal can exist quite independently from a dental depot or a great university. Will it be necessary for us to beg our old subscribers to renew their subscriptions, and will they feel that something important for them would be lacking on their desks if they did no longer receive the New England Journal of Dentistry? We hope to have gained a foothold strong enough to lose no subscriber for the ensuing year, but rather to see the name of every dentist, who reads, on our subscription list.

We hope that our scientific inclinations have been appreciated by the profession, but we know some will say: "What is the use of all this theoretical stuff? What we want is practical rules and formulæ." Let us hope that never the time will come when we are able to do this; we would be afraid that the end of progress was near, for we cannot imagine any greater degree of stagnation than knowledge brought into formulæ; it may do very well for weak minded people, but we hope that humanity never will sink to that. Let us not be misunderstood. We do not mean that there should not be some short, practical rules for people who cannot do all the studying themselves, by which they can get along in complicated cases; but if these rules are to supersede their own thinking, we wish that no

such rules could be given. If our opposition to old venerable (?) theories had no other effect than to put people on their own resources, we would consider our task fulfilled. Never any theory is perfect; we only approach truth, as we only approach falsehood, without ever reaching either absolutely. Only when people have learned to pick out from any statement that which according to their conception of facts, is nearest the absolute truth, will they have advanced to that standpoint which alone makes them their own thinkers. We never consider any one absolutely wrong, however absurd a statement may appear to us; we only consider him more remote from the truth than we are; personally, we never are concerned in a dispute as to the truth or falsehood of any statement in dentistry; we have no interest for or against a certain theory; we only do not believe in self-deception. It is precisely the criterion of a sane man, that his views are in accordance with outer facts, and not only pleasing sentimentalities produced from within. To take an illustration: People afflicted with progressive paralysis are as a rule very happy; they do not feel any pain; the future is exceedingly bright for them; they are living in imaginary everlasting abundance, etc. But will any of us wish to be affected in this way for the purpose of being in a happy delusion? And yet great world-important delusions are being defended every day on this plea of the insane, that they render people happy. The delusion is none the less so because it refers to relations towards the Supreme Being, than because it refers to the causes of caries, etc., and while millions of people are worrying themselves about the supposed aims of a Supreme Being of their own creation, dependent on their more or less perfect knowledge of facts, the number of those interested by any theory in dentistry may not be thousands, but to them it ought to be just as essential and important to get at the truth concerning their special vocation, as it is for men in general to learn something about their destiny, and we should not have any less a conviction in these small things than in religious truth which we deem all-important, though we are far less able to get certain results and have to accept a large amount for granted which we never would accept, if it was to involve the expenditure of only five cents. Let us be honest, and strive to advance, no matter if it agrees with our former opinions or not; it will cause us a little uneasiness during the period of transition, but after we have digested mentally the new facts, we will be fed with real food that will give us real strength, and not with watery squash that produces a watery plethora and deceitful appearance of health, which

will succumb to a first attack of a strong different opinion. While we therefore rather wish to work in the line of general advancement in scientific dentistry, we shall not lose sight of the fact that practical suggestions that mean dollars and cents are also not only useful, but even necessary.

The department of *Operating Table and Laboratory* will be under the special editorship of a practitioner of as high standing in the profession as any.

Our department on *Societies* is managed by a dentist who for years has been the secretary of a large and prosperous dental society.

Last year we gave several reports of meetings of societies as far verbatim as we thought it conducive to the best interests of the profession as a whole; but our experience with these reports has not been very favorable. Few men speak so correctly that their words can be printed immediately without rather extensive stylic alterations; those we have to make, and if they do not come out exactly as the man who talked wishes to have them appear, they send us correction after correction, so similar to what we published ourselves that it is only by sheer politeness that we republish their speech again. Many people who have never been reported do not know how imperfect sentences they make; they think that their sentences are all perfection, and it is only the short-hand writer who has to make up the tail of a sentence that commenced with "if," who knows these human failings; while we therefore personally prefer a poor speech really spoken to one made up at home, but put before the dental world as spoken, we have to accept that slight bit of what shall we call it—inaccuracy, and will have to bring either extracts or home-made speeches.

Our *Selections and Abstracts* we do not put in to fill up space that we cannot fill otherwise, but because we consider the articles selected as of special bearing to the theories defended by us, or because we consider them as giving valuable information in practical directions.

Tolerance is an insult if exercised towards a thinking man; it would show contempt of his brain-power if we would not try to persuade him to change his views as soon as we do not consider them right. While we therefore fight on the subject of opinions, let us never forget that not the slightest degree of animosity exists with us against the individual thus attacked, and that any construction of any sentence in this sense is a mistake—we repeat, it is a mistake, either brought about by an imperfect wording on our side or an imperfect reading on the other side. Soyons amis, Cinna—Let us be friends, though we may be opponents and antagonists.

RAMBLINGS AMONG THE JOURNALS.

Die Zahntechnische Reform (The Dental Reform) is the title of an excellent and very progressive German paper appearing at Berlin, and edited by Gustav H. Pawelz at Charlottenburg, near Berlin. From the May number we see that they discipline also on the other side of the water, members of dental associations for publishing price-lists in the papers. "Party discipline is the cement of all the activity of the associations," says the reporter. We are amazed to hear such harsh despotic rules among people whose laws and customs are formed under the influence of the French ideas of liberty. A patent is described to produce a metallic coating on rubber plates by incorporating platinum and gold fillings into the rubber. Why not right away a metallic plate? How much old fogyism still is reigning in the "country of the thinkers" is evident from the fact that a dentist has been given the melodious title of "Fürstlich Lippe'scher Hofzahnkünstler," or, translated verbally, Princely Lippean Court—Tooth-Artist.(!) The greater part of the June number of the same journal is filled with the question as to the position of the dentist before the law, something of far less importance to us than in European countries.

W. Kay, of Berlin, gives a process by which the wrinkles of the palatal mucous membrane may be copied to perfection, in the June number of the same journal.

A very dangerous arsenical preparation is recommended as new and efficient—the fluid invented or rather mixed by one Wickersheimer for the conservation of corpses, viz.:

1 gallon of water,
3½ oz. of alum,
¾ oz. of salt,
½ oz. of saltpeter,
2 oz. of potash,
½ oz. of white arsenic.

The mixture is filtered and mixed with 40 oz. of glycerine and 10 oz. of wood-spirit.

This mixture created in its time considerable stir, because it was thought to possess quite new and extraordinary powers in preserving human bodies, but its antiseptic powers are more due to its strong alkalicity, which seems to us undesirable in teeth, while we all know from long experience our little unreliable friend, arsenic; hence, be careful in using this new preparation of arsenic.

A standing and almost comical item in the paper is the list of

American D. D. S.'s against whom the laws seem quite especially severe. Every number brings the names of some who have been fined from $15 to $75.

The *Independent Practitioner* of September, 1882, contains a very interesting article by Dr. F. Y. Clark, on Bacteria as the Cause of Decay. On account of the interest manifested at present in this subject, and of the fact that Dr. Clark almost alone stood up for the view in question as long as ten years ago, and that he stuck to it in spite of all the sneers of the best men in the profession, who always were ready to "know all about it," we read also this article as carefully as possible, and we are really astonished to find so many views completely agreeing with our own opinions about the subject. His passage on fermentation seems to us a sketch only which was not meant to be criticised word for word in the most searching manner. Dr. Clark defines fermentation very oddly, to us at least, as "the converting of organic or inorganic matter into something else." Without taking a humorous view of this definition, we will adduce only a few instances to show that the definition cannot be maintained for a moment. If we burn wood we evidently convert it into something else, but would Dr. Clark call that a fermentation? or, if we make sulphuric acid out of sulphur, we "convert an inorganic substance into something else," yet will we have to call the process, according to Dr. Clark, a fermentation? Also, the distinction of these kinds of fermentation: lactic, alcoholic, butric, acetic, ammoniacal and putrefactive, as he gives them in his paper, seem to us not by far as proved to be distinct or even as having anything in common, as Dr. Clark states. There seems to us no doubt that in the light of the latest investigations of Pasteur, Tyndall and others,

FERMENTATION *has to be defined as the transformation of non-azotized* (*non-albuminous*) *matter into other non-azotized substances by the activity of certain distinct, at present not yet always sufficiently-specialized, lower organisms.*

PUTREFACTION *is the transformation of azotized albuminous substances into other, either organic or inorganic substances, by the activity of lower organisms different from those producing fermentation.*

To be justified to call a process putrefaction, it seems further necessary that the products should be offensive to our senses; but the latter is a vague subjective element which properly ought to have no importance with the naming of a physical process, but without that restriction the origin of every human being would be due to a

process of putrefaction, because everything is there to justify it. Sometimes the products of this process are even offensive to our senses, like the Guiteaus, prize-fighters and other roughs, but common people would probably very much object to such an application of the word to their origin. Dr. Clark seems to us to think that evolution stands or falls with the experiments of Bastian or Tyndall. Evolution is a fact of history, and as such it can be proved as little by experiment as the facts of Homer, or the Bible, or of any other writer of old and modern times. No one has seen the origin of the first organism, and as long time as we do not have any more plausible theory about it than generatio equivoca, we have either to accept it, if our mind runs in the line of theories, or we let it remain in suspense until further discoveries give us a clue to the conundrum. But Darwin's theory is at present as well proved as any of the astronomical theories, and we will not reject e. g. Kepler's laws because they do not tell us anything—yet—about the origin of the planetary nebulæ, etc. About the statement, "organic matter cannot of itself bring about inorganic matter no more than inorganic matter can bring about organic," we could make a beautiful squabble, but we do not intend to create the impression that by finding fault with two or three sentences in the paper we do not agree with the hundreds of excellent passages remaining.

Le Progres Dentaire is the title of a very good French dental paper appearing at Paris, of which unfortunately very often nothing but the wrapper arrives at our place. We do not know who is to blame, but we are afraid the economical French wrappers are not destined to stand the strain of the American mail bag. We find it a sad experience that nowhere is mail-matter so roughly handled as in the territory of Uncle Sam. As far as the copies have survived, we find the journal an excellent representative of our art in France. Its number of September prints an extract of Coleman's "*Manuel de Chirurgie et de Pathologie dentaires*," as the title is in the French translation of Dr. Darin. The next article is a translation of Dr. Fletcher's Practical Dental Metallurgy. Dr. V. Galippe tells an interesting case of loss of the teeth, together with locomotoataxia.

An article by Dr. P. Lucas Champonnière insists on the importance of masticating hard substances for the health of the teeth, like the hard bread of the Germans and other northern nations.

If you read a French paper, do not forget the knife, for they never are cut, which does not seem to us a very agreeable thing.

The medical faculty of Paris has proposed the following principles for the right of practising dentistry in France :

1. A course of two years' study in a medical school.
2. Two terms of practice in a surgical clinic.
3. Two years with a dentist or in a dental college.

An examination is finally proposed in general medicine, including an operation on a person afflicted with a disease of the mouth, and general dental practice.

The dentist must be 25 years old. The road is less easy than in the U. S. !

Dr. J. P. Parker, of Bellows Falls, Vt., sends us a communication referring to No. 10 of the Journal about the "chalky" appearance of teeth acted on by muriatic acid. He says: "If I immerse a tooth in a 5 per cent. solution of muriatic acid, the root becomes gristly, while the enamel becomes white and chalky, as I spoke of. Does not the acid have the same effect on the enamel as on the dentine? If different, what is the difference?"

The outward and plainly visible appearances here mentioned are perfectly in accordance with what we observed ourselves, but the explanation of this fact does not seem to us very difficult. It is due to the different quantities of organic substances and water in these two tissues. If we dissolve by muriatic acid the 60 per cent. of lime-salts in *dentine*, there remain still some 30 per cent. of organic substance, combined with a large amount of water, which gives still quite a solid structure; but if we dissolve the 97 per cent. of lime-salts in *enamel*, the remaining 3 per cent. of organic substance with the necessary amount of water are not sufficient to give a structure that resists enough the excavating instrument to be called gristle; the excavating instrument goes so easily through it, that we can no longer call it gristle, but have to call it something softer, and only from remote resemblance we may call it "chalky." I think the term chalky very good, as long as it is only applied to the physical appearance and not to the chemical composition; we only might prefer, in comparing the appearances, not to use a simile that might mislead, and therefore would perhaps prefer to have it called crumbling or powdery, or any other suitable term referring to the mechanical appearance only. The whole dispute was a mere word splitting, but as very many ideas cling to words as such, we thought it might prove useful for somebody's instruction to catch the gnat and see how large it proves to be.

We start our criticism of what we consider one of the most important works on the microscopy of the tissues, produced, not only of our century but of all times—the volume of Dr. Carl Heitzmann on Microscopical Morphology of the Animal Body in Health and Disease. Our fellow-editor, whose special department microscopy is, properly opens the series of criticisms which we intend to bring. We do not think that any dentist up to the requirements of the times will fail to procure the volume for himself. It is no kind of business interest which prompts us to recommend the work so warmly, but the real and thorough conviction of its real and deep value. It is a volume inferior to none published in this century in this line.

OPERATING TABLE AND LABORATORY.

Dr. A. Colton, of Hudson, N. Y., in writing to the editor of *Items of Interest*, gives the following interesting case of "broken teeth reuniting:"

"In the summer of 1874, eight years ago, a blacksmith from a town near by, received a blow in the mouth from a piece of iron which he was trying to straighten on an anvil. The crown of the upper left lateral was broken off at the edge of the gum and fell to the ground; the crown of the lower left lateral was broken diagonally from the edge of the gum on the front side to below the gum on the inside, and turned into the mouth, the gum still adhering to the crown. An hour or two later I placed that crown in position and fastened it in place by means of fine wire around an adjoining tooth, and it re-united and is apparently as strong as ever. A few days since I filled a small cavity in the same tooth, and it still retained its original color. Cases of this kind are so rare it may not be uninteresting to mention it, as the tooth is still to be seen."

Beale's theory that "the teeth are *formed*," consequently "*dead* matter," certainly does not apply to the above case as reasonably as Heitzmann's, who claims that teeth are living tissues.

In connection with the above, we may say that one of our patients has a superior central incisor that was split, by a fall, during childhood, near the central line, from the cutting edge to a point above the margin of the gum. He tells us that he pressed the parts together as well as he could, and left it alone. Under this treatment, it did so well that now (some twenty years afterward) he has an excellent tooth, that has given him no trouble, and requires close inspection to observe the point, or line, of fracture. In this case, also, it would seem that there must have been "*bioplasson*."

We have the laugh on the "Herald of Dentistry" for inferring that the article in our Journal regarding the *gold-plated rubber plate* patent was written by our scientific editor, when he actually knew nothing about it. It would seem to us that a small amount of scientific knowledge would be sufficient to enable one to form a fair estimate of all such "wonderful inventions." If lacking in these qualifications, we suppose experience will of necessity be the school-master.

As regards the reply to our article and the cases mentioned as proofs of mercurial poisoning from rubber plates, we would remark that we see nothing to prove that the conditions were in the least produced by mercury from this source, if from any. Each case can be more clearly explained to any reasoning mind in other ways. We remember a case in our own practice of a lady who was for years out of health and employed many physicians, with no benefit, though one of them, on learning that she wore a set of teeth on red rubber, at once informed her that that was the cause of her ill health, and requested that a black rubber plate be at once substituted. The new plate was made and, as we expected, with no improvement to the general health, for the mouth was one of the cleanest and healthiest ever covered by a plate of any kind. It simply proves that M. D.'s are not always to be relied upon.

We know of another case where a gold plate was inserted (no rubber about it), and in a few days it was completely frosted with mercury. The plate was repolished, with again and again a like result, though, after some months, it retained its gold color. We would like to inquire where the mercury came from.

It so happens that these same M. D.'s many times introduce more mercury into the bodies of their patients than would serve as coloring pigment for several rubber plates, and it may be fortunate for them that they have some such loop-hole for escape when evil results from their own lack of judgment.

Keep on *plating*, gentlemen, till a complete gold plate (or something better) is produced, and then we will wish you abundant success.

A SURE CURE FOR NEURALGIA.—An excellent liniment for neuralgia is made of sassafras, oil of organum, and a half ounce of tincture of capsicum, with half a pint of alcohol. Soak nine yards of red flannel in this mixture, wrap it around the head, and then insert the head a haystack till death comes to your relief.—*N. E. Homestead.*

A querist in one of the late journals desires to know the way to mount a set of teeth to perform the motions of mastication by means of clock-work. He apparently desires to invest in a noticeable sign, and for the benefit of any similarly inclined, we insert a clipping from an unprofessional periodical, showing how such *jaws* are regarded by the public:

"EMPTY JAWS.—Hard by a dentist's office, at a street corner in Chicago, is a hideous advertisement of the dentist's business. And this is the fashion of it: Inclosed in a glass case is a pair of artificial jaws, all glittering with artificial teeth; and these are worked by invisible machinery, which is periodically wound up, and so the jaws are evermore kept going. They chew nothing; they do nothing in the way of accomplishing any practical result, save as they call attention to the operator inside, who is supposed to be the maker and manipulator of those jaws. This ingenious device may possibly bring custom to a dental shop; but for ourselves, we declare that we heartily abhor it. It is on the corner where we take the cars; and there, in grinning ghastliness, it constantly confronts us. In heat or cold, by day or night, those brazen jaws, thick set with ivory, keep grinding on in an utterly aimless, and idiotic way. Time and again have we been tempted to shiver that glass, and end that exasperating exhibition, that seems like a mockery of our poor humanity."

We hardly know whether to deplore the ignorance and lack of appreciation such a man must have of his calling, or curse the miserable fraud he *did not* study with. We are satisfied that no dentist of to-day, who has any self-respect, and treats a student as he should be treated, will ever be disgraced by his making any such query as the above.

A VERY GOOD RESULT.

Eight years ago I visited a little town in Minnesota. My brother lived there, and he wrote: "Bring some instruments for filling teeth, for my wife and daughters need dental operations, and there is no dentist here." It was near the *commencement* of "The New Departure," and so I took some "putty," in the shape of "Stannous gold," and a few instruments. For the wife, and two daughters, aged fifteen and seventeen years, I filled twenty-eight cavities—ten of them crown and the rest proximal. The cavities in the mother's mouth were particularly bad, bicuspids and canines being mere shells.

Last week I visited the same family, in the same village. No dentist there. I took "putty" and instruments again to do what might

be necessary. I examined my former work carefully. ***Not one*** of those fillings had failed that I put in eight years ago. Not one of them had to be repaired. I found eight ***new*** cavities, altogether, in the three mouths, and filled them with more ***modern*** putty.

I send you an incident of office practice.

A month ago Miss H. came in my office.

"Good morning, Doctor," said she.

"Good morning, Miss H., you are a great stranger; I've not seen you for several years," said I.

"That's true, and I'll tell you the reason. Mother thought you overcharged her for the service you rendered me the last time," she replied, smiling.

"O, well, I don't know about that; I know that I charged you three dollars per cavity for eight fillings of 'Stannous gold,' and that was only half what it would have been if you had had the regular gold fillings," I remarked.

"Yes, but you did it so quickly; you was only two hours about it," said she.

"That may be," I replied, "but have they not done you good service?"

"I came to have you examine my teeth and see if they need any fillings," said the young lady.

I examined her mouth and found one cavity that needed filling. Every filling of "Stannous gold" amalgam that I had placed there seven years ago was in perfect condition.

I saw a small "pin head" gold filling in the crown of a lower bicuspid. I asked her, "Who put in this gold filling?"

"Dr. —— put it in a week ago, and I paid him six dollars for it. He frightened me about your amalgam fillings and said they were ruining my teeth and must be all taken out and re-filled with gold; and I really made an ***appointment*** with him to do it, but mother said I shouldn't, and sent me to you."

I filled the one cavity which I found with good "putty," and sent her away happy.

This young lady escaped the clutches of the Gold Fiend; but all are not so fortunate.

HENRY S. CHASE, M. D., D. D. S.,
St. Louis, Mo.

Dentists using sand-paper disks may be interested in a device for holding them, described by Dr. L. D. Shepard, of Boston, at the last meeting of the Conn. Valley Dental Society. Take a block of wood about two inches wide, by one and one-fourth inches thick, and of any length desired. Bore holes through the widest way, of a size a trifle larger than the different sizes of disks. A strip of brass or other metal may be made to cover a little more than half of each hole, with a U-shaped scallop over each hole, on the *open side*. The disks are to be inserted from the bottom, with the sand side facing the metal strip. The holes about half filled are to be followed by a light coiled wire spring, with a pin across at the bottom to hold it in place. The cross-hole for the pin should be of a size to leave the pin loose and easily removed for refilling. The disks are easily brushed with the finger from under the metal plate, the springs bringing them in turn up into position.

Dr. F. Alb. Boeck, of Berlin, in a very good paper on the hardening of rubber in the vulcanizer, comes to the following conclusions:

1. The hardening of rubber is a process of combustion during which by dry distillation a hard elastic residue remains as the result of an escaping of one equivalent of hydrogen.

2. The addition of sulphur serves as a stimulus to facilitate the separation of this equivalent of hydrogen from the carbon of the crude rubber.

3. The degree of temperature and the time required for vulcanizing are inversely in proportion; both depend on the quantity of rubber in the material.

4. The time of vulcanizing can be shortened materially by an increase of temperature, if for the transmission of the heat a substance is used which facilitates a uniform increase of the temperature and carries away the products of gases disengaged.

5. The best means to accomplish all these aims is steam.

—*Zahnt. Reform.*

To avoid joints in block sets, Dr. Höner of Berlin (Ger.), uses very hard plaster casts which he obtains by mixing the plaster with water in which he has dissolved about one-half teaspoonful of gum arabic. Try it.—*Zahnt. Reform.*

BIBLIOGRAPHICAL.

MICROSCOPICAL MORPHOLOGY OF THE ANIMAL BODY IN HEALTH AND DISEASE. *Carl Heitzmann, M. D.* J. H. Vaill & Co., 21 Astor Place, New York.

This work, just issued, is one upon which Dr. Heitzmann has been engaged in the preparation of for ten years. To this work there are twenty other contributors. Among the list are two names quite familiar to readers of the dental literature of the day—Drs. Frank Abbott and C. F. W. Bödecker. The work is divided into twenty-two chapters. The first chapter is devoted to "Methods." In the concluding section of this chapter, "How to use the Microscope," we find what seems to us to be the only deficient feature of the book—deficient in this sense, lacking definiteness and particularity in regard to objectives, their proper kind and use being the *sine qua non* of the great study of histology. By this lack the author is done injustice, because he understands the requirements thoroughly. To convince the reader of the fact, we will mention that previous to receiving his book, the writer of this notice had some correspondence with Dr. Heitzmann regarding the inability of some to see what he claims may be seen in "protoplasm," and the subject of objectives was discussed. The result of this correspondence was, besides other good received, additional light upon a hitherto but little discussed question—the *varying refractive power* of different *objectives*—the finding that the refractive power of a certain first quality *homogeneous immersion* objective being too great to show certain details of structure in a specimen that a *water immersion* objective of same magnifying power would show. Before finishing the review, it may be proper to say that we have been educated to believe that the purpose of an immersion fluid was to counteract the dispersive effect of air upon the light rays passing through the glass upon which and under which the object is placed. In other words, that the best immersion medium was that of which the index of refraction compared closest to the glass—either crown or flint glass—that the front lens of the objective was made from, and the covering glass of object was cut from, so that the rays of light shall be but little if any bent or altered from their direction as they pass through the object and enter the objective. This has been the object in view by makers of *homogeneons immersion* objectives. Biologists are becoming interested and much in favor of *glycerine immersion*. Those of

us who are students of histology know something of refractive power, as evidenced by the effects of different mounting mediums upon similar tissues—knowing that the details of certain delicate connective tissue are invisible if mounted in Canada Balsam, and yet quite perfectly visible if mounted in glycerine or Farrant's Solution. Our remarks are extended upon this point, because in justification of Dr. Heitzmann's claims, one of the many important reasons why the opponents to his theory *cannot see* what he and his students evidently *do see*, should be stated, as he has not done so in his book.

Following "Methods," in Chap. II. comes "General Properties of Living Matter"—"its arrangement in protoplasm," in Chap. III., and the phases of its development being considered in Chap. IV. Chap. V. is upon "The Structure and Origin of Colored Blood Corpuscles," by Louis Elsberg. Then follows "Tissues in General and Special," in several chapters, full and perfect in their order of treatment. Chapter XI. is upon "Inflammation." Preceding the subject upon different tissues in its different phases, is a sketch of history. In this chapter Dr. Bödecker contributes an article—"Necrosis." Chapter XII. is devoted to "Tuberculosis." Without reference to the careful treatment of this subject of tuberculosis of different organs and its etiology, notice should be taken of the author's evident rejection of a septic cause of tuberculous (scrofulous or catarrhal) phthisis, at a time when the germ theory of disease is receiving so much attention, and despite the fact of Koch's recent brilliant achievements in bringing to light a specific baccillus. The poisonous virus which he recognizes as the cause of tuberculosis. Notwithstanding Dr. Heitzmann believes in the work of Pasteur, Dr. Heitzmann has no reason to alter his views as promulgated in 1874. He recognizes the presence of septic organisms in tuberculous matter, but he looks upon their presence there as he would upon their presence in any putrefactive matter—more as a sequence than a cause. Following this is a complete classification of "Tumors." Chapter XIV. is upon "The Skin," epithelia and dermoid growths being duly considered. The next chapter is "The Digestive Tract," and Chapter XVI. is devoted to "The Teeth," by Drs. Bödecker and Abbott. The articles of both these contributors are abstracts from articles published in the *Dental Cosmos*, and they form such a large and valuable portion of the work that no dentist should feel that he can afford to do without the book. The remaining chapters are devoted to "The Liver," "The Respiratory Tract," "The Urinary Tract," "The Urine," "The Male Genital Tract," and the "Female Genital Tract."

It is utterly impossible to properly notice a book of this nature in so brief a manner as this, but we will conclude by remarking upon the illustrations. The plates are evidently all from drawings, and are *beautifully* executed throughout the work. So well is this part of the work done, that it may be safe to say of each contributor what has already been said by a great admirer of Dr. Heitzmann: "He is not only accurate in what he sees, but he is an honest, conscientious delineator thereof." R.

NERVOUS FORCE: ITS ORIGIN AND PHYSIOLOGY. *By W. C. Barrett, M. D., D. D. S.*

A paper read at Cincinnati, before the American Dental Association this year, has also appeared in pamphlet form. The name of the author alone is to us a sufficient warrant that something really valuable, not a selection of commonplaces, will be given to the reader of this philosophical production. We might disagree with the author in what he says about the all-pervading or imponderable ether. It is to us a very unscientific theory, held, as we well know, by many physicists; but to enter into the details of our objections here would lead us too far. That two substances like oil of turpentine and oil of lemons should be "chemically the same," but physically be different, we do not accept. It would be against analogies which have to help us along where we do not yet have anything else. Together with the most eminent authorities of our time, Dr. Barrett considers nervous force nothing but transformed other forces into that peculiar force called nervous force, an opinion with which we perfectly agree. What remains to do is to determine for every special case the components by simpler forces which make up the resultant in this case, called nervous force.

ETIOLOGY OF DENTAL CARIES. ACIDS OR GERMS; WHICH?

This is the title of a pamphlet by Dr. C. T. Stockwell. It is the paper read before the N. E. Dental Society and the Conn. Valley Dental Society. As we published it in our November number, we need hardly say that we agree in the main with the contents of the paper. It would not do to admire too much anything one of our friends writes, but we cannot help—just as if our worst enemy had written it—pronouncing this pamphlet one of the best things we ever read in the Journal. It reviews the investigations of the last year in a manner which cannot fail to prove very forcible to every reader. Dr. Stockwell comes to the conclusion that lower organisms cause and maintain decay, and draws inferences somewhat different from the usual alkaline mouth-washes. We wish we could send a copy to every dentist, that he may get something to think on, at least.

Our best thanks to the genial secretary of the A. D. A. at Chicago for the kindness of sending us a *List of the Dentists in Illinois*—those registered as well as licensed. Such things are quite useful to a journal.

SELECTIONS AND ABSTRACTS.

ANÆSTHETICS MEDICO-LEGALLY CONSIDERED.

D. J. G. Johnson (*Medico-Legal Society's Bulletin*) in an excellent paper makes the following points worthy of attention:

1. Anæsthetics do stimulate the sexual functions; the ano-genital region is the last to give up its sensitiveness. Charges made by females under the influence of an anæsthetic should be received as the testimony of an insane person is. It cannot be rejected; but the *corpus delicti aliunde* rule should be insisted on. Dentists or surgeons who do not protect themselves by having a third person present do not merit much sympathy.

2. Death from administration of chloroform after a felonious assault, unless the wounding was an inevitably fatal one, reduces the crime of the prisoner from murder to a felonious assault.

3. The surgeon has no right to use chloroform to detect crime against the will of the criminal.

4. The army surgeon has the right to use chloroform to detect malingerers.

5. The medical expert, notwithstanding he is sent by order of the court, has no right to administer an anæsthetic against the wish of the plaintiff in a personal damage suit, to detect fraud.

6. Gross violations of the well-known rules of administering anæsthetics, life being lost thereby, will subject the violator to a trial on the charge of manslaughter.

7. A surgeon allowing an untrained medical student to administer anæsthetics, and life being thereby lost, will subject the surgeon himself to a suit for damages. What he does through his agent he does himself.

8. The physician who administers an anæsthetic should attend to that part of the work and nothing else. He should have carefully examined the heart and lungs beforehand. He should have the patient in the reclining position, with his clothes loose, so as not to interfere with respiration; should have his rat-tooth forceps, nitrate of amyl, and ammonia, and know their use, and when to use them and artificial respiration.

9. In operations on the ano-genital region and the evulsion of the toe-nail, complete loss of sensation in these parts should never be allowed, and no operation on these parts at all should be had under an anæsthetic unless by the approval of a full consultation who have a knowledge of the dangers.

10. Chloroform cannot be administered to persons who are asleep without waking them. Experts themselves, with the utmost care, fail more often than they succeed in chloroforming adults in their sleep.

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